7. MASTER MAKING SECTION

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7. Master Making Section

[Adjustment]

1. Thermal Power of Thermal Print Head (4200) K-TPH Assemby < 011-95037 >

1. Turn OFF the power.
2. Remove the Back cover.
3. Adjust the setting of **SW1 (TPH)** on the **Image processin PCB** referring to the chart to the right according to the Resistance value (Ω) marked on the Thermal print head.
4. Next, check the voltage value for thermal power.
5. Open the Upper cover.
6. Remove the Master loading unit cover (top) by loosening two screws on the top and removing two screws in front.
7. Connect a voltmeter between pins **TP1 (+)** and **TP2 (GND**)on the **TPH Power PCB** and disconnect Jumper wire connector **TP3** on the PCB.
8. Close the Upper cover.
9. Turn ON the power and read the voltage on the voltmeter. Confirm that the voltage reading is **23.0 volts**.
10. If the voltage is not 23.0 volts, adjust **VR1 (+20VADJ)** or **VR2 (+20VADJ)** on the **TPH Power PCB** until 23.0 volts is obtained. (VR1 and VR2 can be reached through the opening under the Upper cover).
    VR1 = Fine adjustment VR2 = Rough adjustment
11. Turn OFF the power, and plug Jumper wire connector **TP3** back on the PCB.

Resistance (Ω)	SW (TPH)
1700 ~ 1725	6
1726 ~ 1750	7
1751 ~ 1775	8
1776 ~ 1800	6
1801 ~ 1825	7
1826 ~ 1850	8
1851 ~ 1875	6
1876 ~ 1900	7
1901 ~ 1925	8
1926 ~ 1950	6
1951 ~ 1975	7
1976 ~ 2000	8
2001 ~ 2025	6
2026 ~ 2050	7
2051 ~ 2075	8
2076 ~ 2100	6
2101 ~ 2125	7
2126 ~ 2150	8
2151 ~ 2175	6
2176 ~ 2200	7
2201 ~ 2225	8
2226 ~ 2250	6
2251 ~ 2275	7
2276 ~ 2300	8

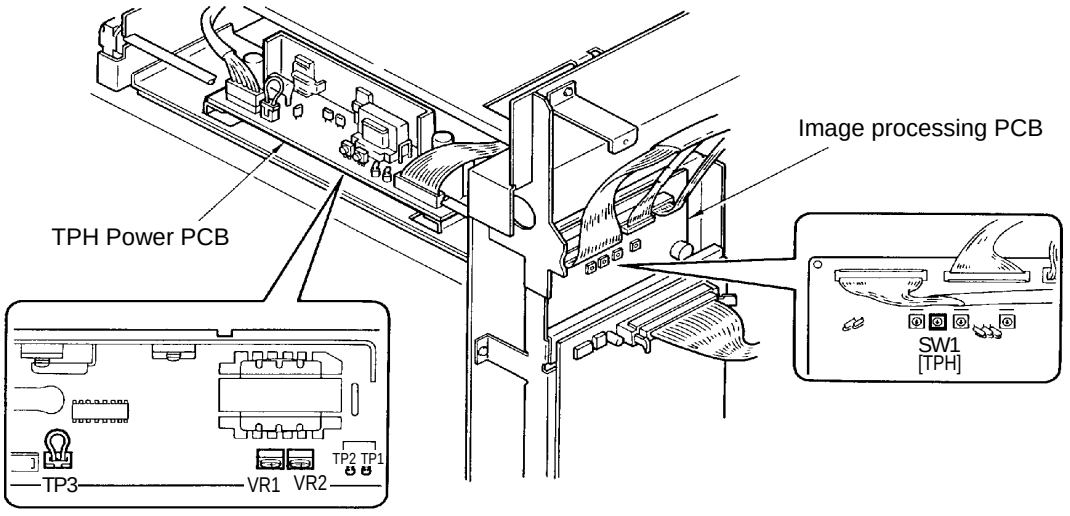
- Precautions in Adjustment -

- This adjustment has to be made every time the Thermal print head is replaced.
- The Upper cover should be closed to apply power to the Thermal print head. Otherwise, the Interlock sw will interrupt the power.

- Results of misadjustment -

- If the voltage is too high; solid print image will be deformed and the heating elements of the Thermal print head will be liable to damages due to overheat.

* If the voltage is too low; thin horizontal lines cannot be reproduced clearly.



2. Thermal Power of Thermal Print Head (4900)

T-TPH Assemly (400) < 017-95035 >

1. Turn off the power.
2. Remove the Back cover.
3. Adjust the setting of **SW4** and **SW5** on the **Image processing PCB S**, refering to the chart to the right according to the Resistance value (Ω) marked on the Thermal print head.
4. Next, check the voltage value for thermal power.
5. Open the Upper cover.
6. Remove the Master loading unit cover (top) by loosening two screws on the top and removing two screws in front.
7. Connect a voltmeter between pins **TP1 (+)** and **TP2 (GND)** on the **TPH Power PCB** and disconnect Jumper wire connector **TP3** on the PCB.
8. Close the Upper cover.
9. Turn ON the power and read the voltage on the voltmeter.
   Confirm that the voltage reading conforms to the chart to the right.
10. If not, adjust **VR1 (+20VADJ)** or **VR2 (+20VADJ)** on the **TPH Power PCB**.
    (VR1 and VR2 can be reached through the opening under the Upper cover).
    VR1 = Fine adjustment VR2 = Rough adjustment
11. Turn OFF the power and plug Jumper wire connector **TP3** back on the PCB.

Voltage (V)	Resistance (Ω)	SW4 / SW5
19.0	2295 ~ 2382	F / E
19.5	2383 ~ 2421	E / D
	2422 ~ 2510	F / E
20.0	2511 ~ 2547	E / D
	2548 ~ 2640	F / E
20.5	2641 ~ 2676	E / D
	2677 ~ 2773	F / E
21.0	2774 ~ 2808	E / D
	2809 ~ 2910	F / E
21.5	2911 ~ 2944	E / D
	2945 ~ 3050	F / E
22.0	3051 ~ 3082	E / D
	3083 ~ 3194	F / E
22.5	3195 ~ 3224	E / D
	3225 ~ 3341	F / E
23.0	3342 ~ 3369	E / D
	3370 ~ 3450	F / E

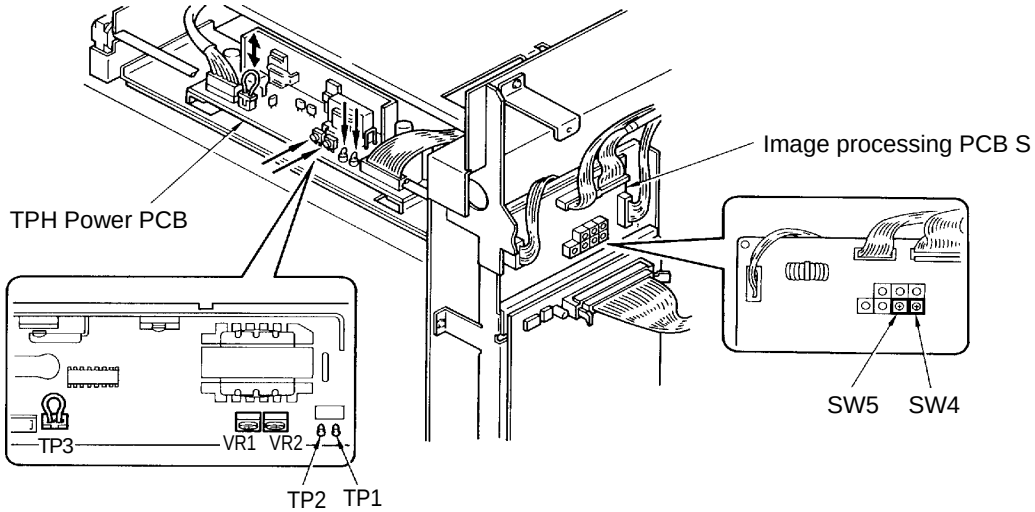
- Precautions in Adjustment -

- This adjustment has to be made every time the Thermal print head is replaced.
- The Upper cover should be closed to apply power to the Thermal print head. Otherwise, the Interlock sw will interrupt the power.

- Results of misadjustment -

- If the voltage is too high; solid print image will be deformed and the heating elements of the Thermal print head will be liable to damages due to overheat.

* If the voltage is too low; thin horizontal lines cannot be reproduced clearly.



3. Thermal Power of Thermal Print Head (5900)

K-TPH Assembly (400) < 017-95037 >

1. Turn off the power.
2. Remove the Back cover.
3. Adjust the setting of **SW4** and **SW5** on the **Image processing PCB F**, refering to the chart to the right according to the Resistance value (Ω) marked on the Thermal print head.
4. Next, check the voltage value for thermal power.
5. Open the Scanner table.
6. Remove the Master loading unit cover (top) by loosening two screws on the top and removing two screws in front.
7. Connect a voltmeter between pins **TP1 (+)** and **TP2 (GND)** on the **TPH Power PCB**, and disconnect the Jumper wire connector **TP3** on the PCB.
8. Close the Scanner table.
9. Turn ON the power and read the voltage on the voltmeter.
   Confirm that the voltage reading conforms to the chart to the right.
10. If not, adjust **VR1 (+20VADJ)** or **VR2 (+20VADJ)** on the **TPH Power PCB**.
    (VR1 and VR2 can be reached through the opening under the Upper cover).
    VR1 = Fine adjustment VR2 = Rough adjustment
11. Turn OFF the power, and plug the Jumper wire connector **TP3** back on the PCB.

Voltage (V)	Resistance (Ω)	SW4 / SW5
20.0	2040 ~ 2118	D / C
	2119 ~ 2130	E / D
20.5	2131 ~ 2149	C / B
	2150 ~ 2227	D / C
21.0	2228 ~ 2256	C / B
	2257 ~ 2339	D / C
21.5	2340 ~ 2366	C / B
	2367 ~ 2453	D / C
22.0	2454 ~ 2479	C / B
	2480 ~ 2570	D / C
22.5	2571 ~ 2595	C / B
	2596 ~ 2690	D / C
23.0	2691 ~ 2713	C / B
	2714 ~ 2760	D / C

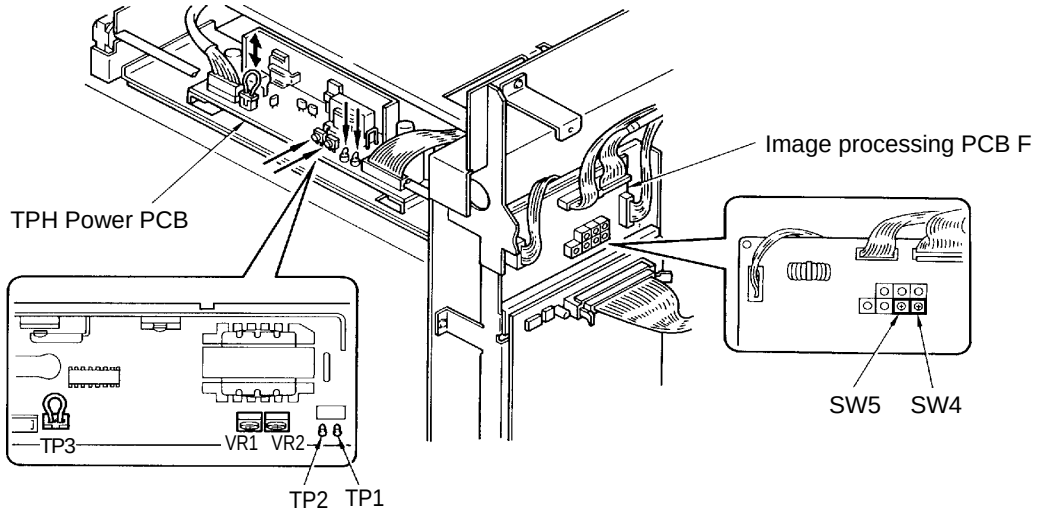
- Precautions in Adjustment -

- This adjustment has to be made every time the Thermal print head is replaced.
- The Scanner table should be closed to apply power to the Thermal print head. Otherwise, the Interlock sw will interrupt the power.

- Results of misadjustment -

- If the voltage is too high; solid print image will be deformed and the heating elements of the Thermal print head will be liable to damages due to overheat.

* If the voltage is too low; thin horizontal lines cannot be reproduced clearly.



4. Master Making Length (Write Pulse Motor Operation Time)

1. Make a master using an A3 (or Ledger) size original without the top margin and make copies with A3 (or Ledger) size paper.
   Note: The original should have vertical lines drawn from edge to edge.
2. Measure the length of the line on printed copies and confirm that it is **357mm** (with B4 drum), **290mm** (with A4 drum) or **348.5mm** (with Legal drum).
3. If the length is more or less than the above value, use Memory SW **No. 85** (Test mode No.85) to make any corrections.
4. When Memory SW **No. 85** is selected, the panel display shows **0 85**.
   The first digit "**0**" indicates a Memory switch setting.
5. Use the PRINT POSITION button ◁ or ▷ on the operation panel to select a desired Memory SW setting number, referring to the chart below.
   For instance, if Memory SW setting number **9** needs to be selected, press the PRINT POSITION button until the display shows **9 85**.
6. **To input the selected Memory SW setting into the machine, press the STOP button and then the ALL RESET button.**
   The panel display returns to an ordinary indication.

!! VERY IMPORTANT !!

- Precautions in Adjustment -

- The once-input Memory SW setting can not be erased even if Test mode **No.90** or **97** is activated or when the System ROM is replaced.
- The Memory SW setting is erased when the **System PCB** is replaced or when Test mode **No.98** is applied. In this case, all other Memory SW settings will also be erased.

Setting No.	0	1	2	3	4	5	6	7
Pulses	0	+8	+16	+24	+31	+39	+47	+55
Adjustable Range (mm)	±0.0	+0.5	+1.0	+1.5	+2.0	+2.5	+3.0	+3.5
	8	9	A	B	C	D	E	F
	+63	-55	-47	-39	-31	-24	-16	-8
	+4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5

5. Master Making Width

1. Place a sheet of paper with a width of 8.5" (A4 size paper) or 11" (B4 size) on the Paper feed tray and slide the Side guides against the paper.

2. Select Test mode **No. 91** and activate it.

   1 91 will appear on the display. - Press the START button again.

   1 63 will appear on the display when A4 size paper is used.

   1 36 will appear on the display when B4 size paper is used.

3. If a different number other than the above appears, turn **SW7** of the **Image processing PCB** until the correct number appears.

- Note -
- The actual width of master making will be 2mm narrower on each side, compared to the original.
- Turning SW7 to a larger number will increase the Master making width. Turning it to a smaller number will decrease the width.
- One notch of SW7 will change the Master making width by 1mm.

[Reference - Master making area definition according to loaded paper width]

	Paper Width (mm)	**Paper Size Det. Sensor Status**	**Defined Paper Size**	**Master Making Area** (Wide x Long)
Metric Models	307.0 ~ 292.0	Detection No Detection	A3 Portrait A4 Landscape	251.0 x 357.0 251.0 x 203.0
	291.5 ~ 268.5	Detection No Detection	No definition No definition	Paper width x 357.0 Paper width x 313.5
	268.0 ~ 252.0	Detection No Detection	B4 Portrait B5 Landscape	251.0 x 357.0 251.0 x 176.0
	251.5 ~ 226.5	Detection No Detection	No definition No definition	Paper width x 357.0 Paper width x 313.5
	226.0 ~ 206.0	Detection No Detection	Foolscap Portrait A4 Portrait	210.0 x 323.0 204.0 x 290.0
	205.5 ~ 192.5	Detection No Detection	No definition No definition	Paper width x 357.0 Paper width x 313.5
	192.0 ~ 178.0	Detection No Detection	No definition B5 Portrai	Paper width x 357.0 176.0 x 250.0
	177.5 ~ 67.9	Detection No Detection	No definition No definition	Paper width x 357.0 Paper width x 313.5
US Models	307.0 ~ 291.5 (12.1" ~ 11.5")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")
	291.0 ~ 274.0 (11.5" ~ 10.8")	Detection No Detection	Ledger Portrait Letter Landscape	251.0 (9.9") x 357.0 (14.0") 251.0 (9.9") x 208.0 (8.2")
	273.5 ~ 225.5 (10.8" ~ 8.9")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")
	225.0 ~ 211.0 (8.9" ~ 8.3")	Detection No Detection	Legal Portrait Letter Portrait	209.0 (8.2") x 349.0 (13.7") 209.0 (8.2") x 272.0 (10.7")
	210.5 ~ 150.5 (8.3" ~ 5.9")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")
	150.0 ~ 136.0 (5.9" ~ 5.4")	Detection No Detection	No definition Statement Portrait	Paper width x 357.0 (14.0") 134.0 (5.3") x 209.0 (8.2")
	135.5 ~ 67.9 (5.4" ~ 2.7")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")

6. Thermal Power of Thermal Print Head <GR3750/2750/1750>

1. Turn off the power.
2. Remove the Back cover.
3. Confirm the setting of **SW4** and **SW5** on the **Image Processing PCB** as described below.
   If not, set them at the correct positions.

SW4	**E**	SW5	**D**

4. Check the voltage value for thermal power, referring to the chart on the right. Use the Resistance value (Ω) marked on the Thermal Print head.
5. Open the Scanner table.
6. Remove the Master loading unit cover (top) by loosening two screws on the top and removing two screws in front.
7. Connect a voltmeter between pins **TP1 (+)** and **TP2 (GND)** on the **TPH Power PCB**, and disconnect the Jumper wire connector **TP3** on the PCB.
8. Close the Scanner table.
9. Turn ON the power and read the voltage on the voltmeter. Confirm the voltage reading conforms to the chart to the right.
10. If not, adjust **VR1** or **VR2** on the **TPH Power PCB**.
    (VR1 and VR2 can be reached through the opening under the Upper cover).
    VR1 = Fine adjustment VR2 = Rough adjustment
11. Turn OFF the power, and plug the Jumper wire connector **TP3** back on the PCB.

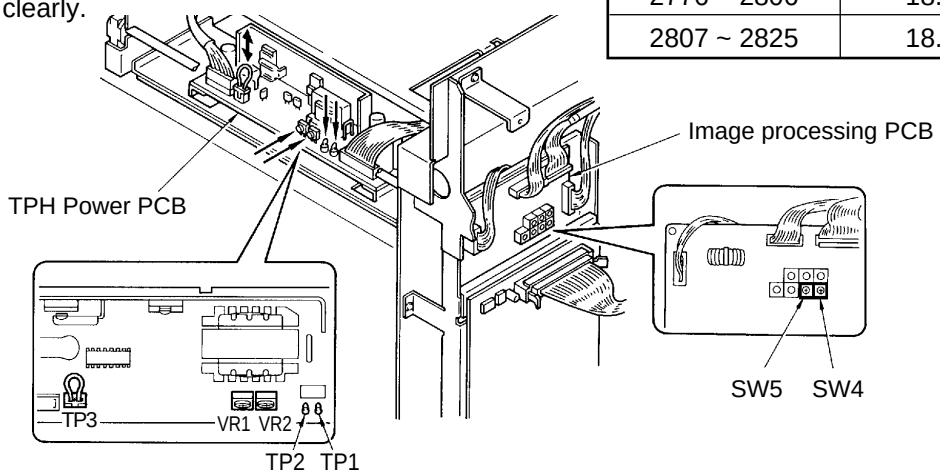
- Precautions in Adjustment -

- This adjustment has to be made every time the Thermal print head is replaced.
- The Scanner table should be closed to apply power to the Thermal print head. Otherwise, the Interlock switch will interrupt the power.

- Results of misadjustment -

- If the voltage is too high; solid print image will be deformed and the heating elements of the Thermal print head will be liable to damage due to overheating.
- If the voltage is too low; thin horizontal lines will not be reproduced clearly.

Resistance (Ω)	Voltage (V)
2045 ~ 2067	15.7
2068 ~ 2093	15.8
2094 ~ 2120	15.9
2121 ~ 2146	16.0
2147 ~ 2173	16.1
2174 ~ 2200	16.2
2201 ~ 2227	16.3
2228 ~ 2255	16.4
2256 ~ 2282	16.5
2283 ~ 2310	16.6
2311 ~ 2338	16.7
2339 ~ 2366	16.8
2367 ~ 2394	16.9
2395 ~ 2422	17.0
2423 ~ 2451	17.1
2452 ~ 2479	17.2
2480 ~ 2508	17.3
2509 ~ 2537	17.4
2538 ~ 2566	17.5
2567 ~ 2596	17.6
2597 ~ 2625	17.7
2626 ~ 2655	17.8
2656 ~ 2685	17.9
2686 ~ 2715	18.0
2716 ~ 2745	18.1
2746 ~ 2775	18.2
2776 ~ 2806	18.3
2807 ~ 2825	18.4



7. Thermal Power of Thermal Print Head <GR1700>

1. Turn off the power.
2. Remove the Front Right Cover.
3. Confirm that **SW1** on the **Power Supply PCB** is set to 9. If not then set it to the correct position.

SW1	**9**

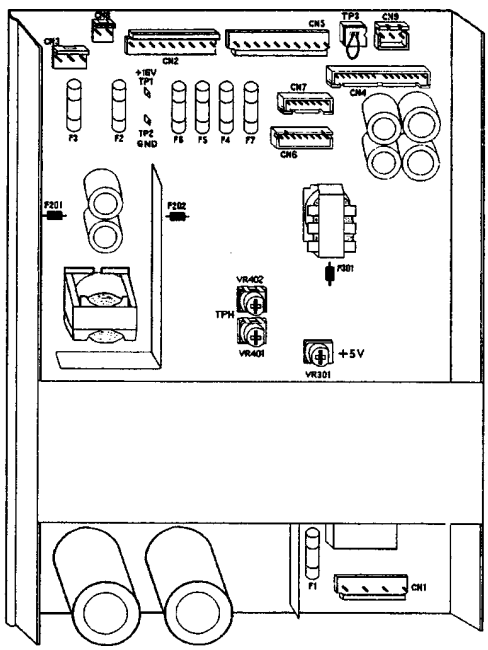
4. Check the voltage value for thermal power, referring to the chart on the right. Use the Resistance value (Ω) marked on the Thermal Print head.
5. Connect a voltmeter between pins **TP1 (+)** and **TP2 (GND)** on the **Power Supply PCB**, and disconnect the Jumper wire connector **TP3** on the PCB.
6. Turn ON the power and read the voltage on the voltmeter. Confirm the voltage reading conforms to the chart to the right.
7. If not, adjust **VR1** or **VR2** on the **Power Supply PCB**.
   VR1 = Fine adjustment VR2 = Rough adjustment
8. Turn OFF the power, and plug the Jumper wire connector **TP3** back on the PCB.

- Precautions in Adjustment -

- This adjustment has to be made every time the Thermal print head is replaced.
- The Scanner table should be closed to apply power to the Thermal print head. Otherwise, the Interlock switch will interrupt the power.

- Results of misadjustment -

- If the voltage is too high; solid print image will be deformed and the heating elements of the Thermal print head will be liable to damage due to overheating.
- If the voltage is too low; thin horizontal lines will not be reproduced clearly.



Resistance (Ω)	Voltage (V)
1360 ~ 1365	17.7
1366 ~ 1381	17.8
1382 ~ 1397	17.9
1398 ~ 1413	18.0
1414 ~ 1429	18.1
1430 ~ 1445	18.2
1446 ~ 1461	18.3
1462 ~ 1477	18.4
1478 ~ 1494	18.5
1495 ~ 1510	18.6
1511 ~ 1527	18.7
1528 ~ 1543	18.8
1544 ~ 1560	18.9
1561 ~ 1577	19.0
1578 ~ 1594	19.1
1595 ~ 1611	19.2
1612 ~ 1628	19.3
1629 ~ 1645	19.4
1646 ~ 1663	19.5
1664 ~ 1680	19.6
1681 ~ 1697	19.7
1698 ~ 1715	19.8
1716 ~ 1733	19.9
1734 ~ 1750	20.0
1751 ~ 1768	20.1
1769 ~ 1786	20.2
1787 ~ 1804	20.3
1805 ~ 1822	20.4
1823 ~ 1840	20.5

8. Master Making Width <GR>

1. Place a sheet of paper with width of 8.5" (A4 size paper) or 11" (B4 size) on the Paper feed tray, and slide the Side guides against the paper.

2. Select Test mode **No. 91** and activate it.
   (On GR2710 or 1700, 1 91 will appear on the display. Press the START key again.)

   - The A/D data "**90**" or 1 90 will appear on the display when A4 size paper is used.
   - The A/D data "**63**" or 1 63 will appear on the display when B4 size paper is used.

3. If a different number other than the above appears, turn **SW7** of the **Image Processing PCB** until the correct number appears.

- Note -
- Factory settings will cause a -2mm magnification on each side.
- Turning SW7 to a larger number will increase the Master making width. Turning it to a smaller number will decrease the width.
- One notch of SW7 will change the Master making width by 1mm.

[Reference - Master making area definition according to loaded paper width]

	Paper Width (mm)	**Paper Size Det. Sensor Status**	**Defined Paper Size**	**Master Making Area** (Wide x Long)
Metric Models	307.0 ~ 292.0	Detection No Detection	A3 Portrait A4 Landscape	251.0 x 357.0 251.0 x 203.0
	291.5 ~ 268.5	Detection No Detection	No definition No definition	Paper width x 357.0 Paper width x 313.5
	268.0 ~ 252.0	Detection No Detection	B4 Portrait B5 Landscape	251.0 x 357.0 251.0 x 176.0
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	177.5 ~ 67.9	Detection No Detection	No definition No definition	Paper width x 357.0 Paper width x 313.5
US Models	307.0 ~ 291.5 (12.1" ~ 11.5")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")
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	210.5 ~ 150.5 (8.3" ~ 5.9")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")
	150.0 ~ 136.0 (5.9" ~ 5.4")	Detection No Detection	No definition Statement Portrait	Paper width x 357.0 (14.0") 134.0 (5.3") x 209.0 (8.2")
	135.5 ~ 67.9 (5.4" ~ 2.7")	Detection No Detection	No definition No definition	Paper width x 357.0 (14.0") Paper width x 313.5 (12.3")

9. Heating Rate of Thermal Print Head <GR>

1. Use Memory SW **No. 88** (Test mode No. 88) to overcome set-off problems.
2. If the machine tends to have set-off problems though the thermal power is adjusted correctly, use this Memory SW to reduce the thermal power of the Thermal head without changing the voltage setting.
3. Select the Memory SW **No. 88** and use the PRINT POSITION key on the operation panel to select a desired Memory SW setting number, referring to the chart below.
4. **To input the selected Memory SW setting into the machine, press the STOP key and then the ALL RESET key.**
   The panel display returns to normal operation.

- Precautions in Adjustment -

- The Memory SW setting will not be erased if Test mode **No.90** or **97** is activated or when the System ROM is replaced.
- The Memory SW setting is erased when the **System PCB** is replaced or when Test mode **No.98** is applied. In this case, all other Memory SW settings will also be erased.

Heating Rate Chart

Memory Sw Setting	0	1	2	3	4
TPH Heating Rate	100%	105%	95%	90%	85%